

## **Recipients of the Haagen-Smit Clean Air Award 2001-2008**

Since 2001, the Air Resources Board has sponsored the Haagen-Smit Clean Air Award. This Award is given annually to recognize and honor individuals who have made outstanding efforts and achievements toward improving air quality so that public health and welfare are adequately protected against the adverse effects of air pollution. The Haagen-Smit Award is given to two or three people each year to recognize significant career efforts in at least one of several air quality categories, including research, environmental policy, science & technology, public education, or community service. The California Air Resources Board proudly recognizes the following recipients of the Haagen-Smit Clean Air Award.

### **2001**

#### ***Dr. John R. Holmes—Air Pollution Research***

Dr. John Holmes, a Science Advisor to the Chairman of the Board, is one of the pioneers in initiating the studies of photochemical smog. As Chief of ARB's Research Division, Dr. Holmes administered an extensive, cutting edge research program recognized worldwide. His contributions in the last three decades had a tremendous impact on the way air pollution research is conducted; and how air pollution control strategies are formulated.

#### ***Senator Byron Sher—Environmental Policy***

Senator Byron Sher has been an ardent environmentalist in the California Legislature for over 20 years. He has authored many landmark environmental laws, including the California Clean Air Act. His lifetime dedication to clean air causes has established a solid foundation for the continued protection of environmental resources as well as public health in California. Senator Sher's contributions to environmental law legislation have been instrumental in shaping California's role as a world leader in pollution control policy and technology.

## **2002**

### ***Dr. James N. Pitts—Air Pollution Research***

Dr. James Pitts has committed over 50 years of his career to promote and advance the cause of clean air. He is an internationally renowned atmospheric chemist. Following Dr. Haagen-Smit's work on the mechanism of smog formation, Dr. Pitts led the efforts to establish the Statewide Air Pollution Research Center at the University of California, Riverside and served as the Center's Director for 18 years. Under his leadership, research flourished and has provided much of the basis for our understanding of air pollution and its control. He mentored many scientists who also became productive and distinguished researchers in the field. Dr. Pitts has served on various committees and advisory boards related to air quality. He is a great lecturer and educator, an author and editor of numerous scientific publications, and a strong advocate of clean air.

### ***Ms. Mary D. Nichols—Environmental Policy***

Ms. Mary Nichols, current Chairman of the Board, has spent more than three decades as a leader of environmental organizations, and state and federal agencies. Ms. Nichols has been instrumental in helping to forge the nation's, as well as the rest of the world's, approach to environmental protection and to establish California as the environmental benchmark for the rest of the world. She took part in the California clean air movement in the early 1970s. Besides her accomplishments in the federal government and environmental organizations, her lasting impacts on California's path to clean air were made during her previous tenure as the Chair of the Air Resources Board, from 1978-1983, and Secretary of Environmental Affairs. Ms. Nichols continues to lead the efforts to set environmental policies that have balanced approaches to improve public health and environmental quality with economic viability.

## **2003**

### ***Dr. John H. Seinfeld—Air Pollution Research***

Dr. John Seinfeld is the Louis E. Nohl Professor in the Divisions of Chemistry and Chemical Engineering and Engineering and Applied Science at the California Institute of Technology. Dr. Seinfeld is widely acknowledged for his pioneering research in the field of atmospheric science, and academic role in mentoring many of today's leading scientists.

Through both experimental and theoretical studies, he has made numerous contributions to our knowledge of the chemistry of the urban atmosphere, the formation, growth, and dynamics of atmospheric aerosols, and the role of aerosols in climate. His contributions in the last three decades have made a significant impact on the way air pollution research is conducted, and how air pollution control strategies are formulated.

***Mr. V. John White—Environmental Policy***

Mr. John White is a major player in many landmark clean air policies enacted in California. He has worked fervently behind the scenes in the passage of the California Clean Air Act, the Toxic Air Contaminant Identification and Control Act (AB1807), Carl Moyer Program, and others. Recently, he played a key role in the passage of the Pavley Bill (AB1493) to reduce greenhouse gas emissions from passenger vehicles. Mr. White has been an ardent environmentalist in California for the past 20 years. His dedication to clean air causes has promoted a solid foundation for the continued protection of air quality and public health in California.

***Mr. Michael P. Walsh —Mobile Source Emission Reduction***

Mr. Michael Walsh is an internationally recognized advocate for regulating mobile source emissions. He has served as a technical and policy consultant to many foreign governments and industries in Asia, Europe, and South America. He is instrumental in leapfrogging the transfer of state-of-the-science mobile source control strategies and technologies around the world especially for developing nations. As an executive staff member at the US EPA, Mr. Walsh played a key role in spearheading the federal program in reducing emissions from diesel engines. Through his ability to make technical information easy to understand and to convince policymakers to take the proper course of action, many developing countries have begun to implement effective mobile source control programs that will result in improved air quality for people around the world.

**2004**

***Dr. Roger Atkinson—Air Pollution Research***

Dr. Roger Atkinson is a distinguished Professor in the Department of Environmental Sciences and Department of Chemistry, and Director of the Air Pollution Research Center at the University of California, Riverside. His

pioneering research in atmospheric reactions of radicals and organic chemicals has elucidated the chemistry responsible for the formation of ozone and other air pollutants. His 30 years of research and service on review panels are reflected in his more than 300 publications. His lifetime work has made a lasting impact on the way air pollution research is conducted, and how air pollution control strategies are formulated. Dr. Atkinson is a Fellow of the American Association for the Advancement of Science and has received many distinguished awards including Atmospheric Environment's Haagen-Smit Award and the American Chemical Society Award for Creative Advances in Environmental Science and Technology.

### ***Mr. Leon Billings—Environmental Policy***

Mr. Leon Billings, as a principal staff member of the late U.S. Senator Edmund S. Muskie, played a pivotal role in the enactment of several landmark federal air and environmental laws. His role in getting the Clean Air Act and its amendments passed is well known across the country. He successfully resisted efforts to make the Clean Air Act and other environmental laws preemptive, thus preserving the ability of California to enact its own statutes and adopt more stringent regulations when necessary. Throughout his public and private careers, Mr. Billings not only mobilized efforts to defend the laws enacted, but also mounted campaigns to expand their effectiveness at the state and federal levels. Absent his efforts in the 1980s, it is likely that fundamental provisions of the Clean Air Act would have been effectively repealed. In the 1990s when federal air pollution programs were languishing, he helped kindle a spirit of innovation and commitment in state legislatures. For nearly 40 years, Mr. Billings has persistently pursued (sometimes as a lone crusader) a drive to reduce air pollution in not only the United States, but throughout the world.

### ***Dr. David V. Bates—Air Pollution Research***

Dr. David Bates was a Professor Emeritus of Medicine at the University of British Columbia. Much of his 50-year medical career has been dedicated to research on many basic processes of lung physiology, growth, and defenses in response to air pollutants. He also initiated one of the first time-series studies of hospital admissions and air pollutants. His pioneering research to identify the adverse health effects of air pollution by employing population-based studies still serves as the model for

researchers today. Dr. Bates is one of the top experts in the interpretation of the results of epidemiological studies relating air pollutants and their health effects on human populations. His views and advice are highly regarded by air pollution control agencies in formulating their public health policies. Dr. Bates is a Fellow of the Royal Society of Canada, and received numerous outstanding awards including the Order of Canada - Canada's highest civilian honor. Dr. Bates passed away on November 21, 2006.

## **2005**

### ***William P. L. Carter, Ph.D.—Air Pollution Research***

Dr. Bill Carter is a distinguished research chemist at the Statewide Air Pollution Research Center, University of California, Riverside. Over the past 30 years, he has dedicated himself to study the photochemical mechanisms of volatile organic compounds (VOCs) and nitrogen oxides leading to the formation of ozone. Dr. Carter is a world leader in elucidating the photooxidation mechanisms and ozone-forming potential of VOCs. His findings on photooxidation mechanisms have long been incorporated as an essential element in most urban and regional airshed models. Reactivity scales devised by him have enabled air pollution control agencies to focus their regulatory efforts on VOCs with high ozone-forming potential. His lifetime work has made a long-lasting impact on how air pollution control strategies are formulated.

### ***Curtis A. Moore—Environmental Policy***

Mr. Curtis Moore is an international consultant and writer on advanced environmental policies and technologies. He has been an ardent advocate for clean air throughout his career as a federal legislative lawyer and as a writer. For the past 25 years, he has engaged in environmental issues ranging from global warming to the toxic chemical “Superfund” program. He has served as a counsel for the U.S. Senate Committee on Environment and Public Works for 11 years and was instrumental in the development of what later became known as the 1990 U.S. Clean Air Act Amendments. Mr. Moore is an excellent writer with a skill for converting complex subjects and ideas into layperson's language. He has authored many environmental articles reflecting many of his unique policy perspectives about environment protection, economy, urbanization, and

resources sustainability. Along with Dr. David Bates, he co-authors the Health and Clean Air Newsletters, which covers major issues in air pollution.

### ***Timothy C. Belian—Air Pollution Research***

Mr. Timothy Belian, Executive Director of Coordinating Research Council (CRC), has devoted a career of 35 years in developing and managing cooperative research programs to enhance the performance of on-road vehicles, and the understanding of reducing vehicular emissions. Under Mr. Belian's direction, CRC actively facilitates collaboration among academia, business, and government in addressing air quality problems related to reducing mobile source emissions. These efforts enable the pooling of knowledge and resources resulting in an effective approach to focus on critical issues. Mr. Belian is known for his insight, patience and consensus-building skills in bringing together appropriate government agencies and industries with widely divergent views and objectives to the table and coming up with solutions to protect public health.

## **2006**

### ***James D. Boyd—Environmental Policy***



Mr. James Boyd is currently a Commissioner of the California Energy Commission where he actively seeks consensus to balance energy, economic, and environmental concerns with public health and welfare. His long and distinguished career as a public servant and air quality advocate includes serving as Deputy Secretary in the California Resources Agency, Assistant Director in the California Department of Fish and Game, Executive Officer of the California Air Resources Board, and additional managerial positions in the Health and Welfare Agency, the Department of Health, the Department of Water Resources, and the Department of Finance. His foundational understanding of issues combined with his open and fair-minded approach to addressing concerns while resolutely moving forward to protect public health and welfare has earned the respect and admiration of all perspectives on complex issues. One of the biggest testaments to his professionalism and problem-solving skills is his 15-year tenure as the Executive Officer of the California Air Resources Board, when he served five different Chairs and three Governors of varied political

persuasions. At the Resources Agency, Mr. Boyd created and chaired the State's first Joint Agency Climate Change Team and State Natural Gas Working Group. At the California Energy Commission, Mr. Boyd has overseen the critical Integrated Energy Policy Reports, and presently chairs the Transportation Fuels and Natural Gas Committees. Mr. Boyd is the state's liaison to the Nuclear Regulatory Commission, and California's representative on the Border Governors' Conference Energy Worktable, and the Energy Commission's representative on the Steering Team of the California Fuel Cell Partnership and the Board of Directors of CALSTART. He served on the Governor's Hydrogen Highway Network Implementation Advisory Panel and presently serves on the Governors Climate Action Team. Mr. Boyd continues to be a key player for reducing future air pollutant emissions by advocating efficient energy use. He presently leads the Bioenergy Interagency Working Group that developed and is now implementing the Governor's Bioenergy Action Plan. He is overseeing the Commissions efforts to develop alternative transportation fuels plans requested by the Governor and Legislature. Mr. Boyd has actively and insightfully participated on many and varied air quality associations, boards, commissions, and committees.

***Axel Friedrich, Ph.D.—Emission Reduction Technologies***



Dr. Axel Friedrich currently heads the Environment, Transport, and Noise Division of the German Environmental Protection Agency (Umweltbundesamt). He was the moving force behind the initial adaptation by Germany, and later Europe, of stringent standards for vehicles and fuels. From fuel savings with low rolling resistance tires to more than a 99% reduction in ultra-fine particle emissions from Euro V diesel trap filter programs, Dr. Friedrich and his staff of scientists and visionaries have pioneered the European emission reduction program through technological adaptation. Dr. Friedrich and his staff have developed innovative ideas into aids for technological emission reductions by using tax incentives for early introduction of low emission technological advancements, monitoring real-world on-road emissions on a continuous basis, introducing robust programs for verifying promised emission reductions, and better quantifying the land use planning-road building impact on air quality. Dr. Friedrich was also the principal behind Germany's mobile source emission inventory simulation programs now used throughout the European Union. Much of

these emissions reductions can be attributed to Dr. Friedrich's championing of new emission control technologies.

His unselfish willingness to share his knowledge and expertise with the international community has helped reduce air pollution not only in Europe but also the Americas and Asia. He has also been a moving force in helping to guide the European Union toward its adaptation and implementation of aggressive programs to address greenhouse gas emissions and global climate change. As the global threats posed by air pollution became more evident, he helped to launch World Bank programs to reduce air pollution in Asia and Latin America. Dr. Friedrich has a passionate interest in confronting air pollution and climate change on a global scale with comprehensive and multi-faceted approaches.

### ***Arthur M. Winer, Ph.D.—Air Pollution Science***



Dr. Arthur Winer is a Distinguished Professor of Environmental Health Sciences at the University of California, Los Angeles, School of Public Health. His 35-year career in air pollution research and teaching began in 1971 at UC Riverside's Statewide Air Pollution Research Center (SAPRC) where he worked with Dr. James N. Pitts, Jr. and served as Associate Director of SAPRC from 1978 to 1986. Although his research interests have been diverse, topical, and extensively published in nearly 200 peer-reviewed journal articles, Dr. Winer's legacy may be best defined by the remarkable number of graduate students he has mentored and taught to think critically about how to conduct air pollution research. He has trained a large fraction of the next generation of air pollution specialists who are addressing current air quality issues related to atmospheric chemistry, ozone, fine and ultra-fine particles, toxic air contaminants, biogenic emissions, global atmospheric processes, and the exposure of susceptible populations to a wide range of air pollutants. For nearly two decades, Dr. Winer has been a core faculty member in the UCLA Environmental Science and Engineering (ESE) Program and was the Program's Director and Chair between 1989 and 1997. He has provided academic and professional guidance to nearly all of the more than 200 alumni of the ESE Program. His influence is widely felt as ESE Program graduates fill important leadership positions at the Air Resources Board, South Coast Air Quality Management District, Army Corp of Engineers and U.S. Environmental Protection Agency. Dr. Winer has been selfless in supporting his students with his boundless time, energy and enthusiasm.

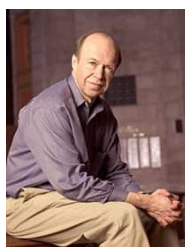


Dr. Winer has actively served on many professional committees and advisory groups and has been a strong advocate for clean air quality. His scientific guidance has effectively informed and influenced air pollution policy in California, as well as nationally and internationally. Dr. Winer has been actively involved for over 35 years in air quality research, development of environmental policy, and the training of our air pollution scientists and policy-makers.

## **2007**

(Note: The U.S. Supreme Court ruled in April 2007 that the US Environmental Protection Agency should consider carbon dioxide as an air pollutant because it affects public welfare as the major greenhouse gas contributing to climate change impacts.)

### ***James E. Hansen, Ph.D.—Atmospheric Science***



Dr. James Hansen is the Director of NASA's Goddard Institute for Space Studies (GISS) located in New York City. He is also Adjunct Professor in Earth and Environmental Sciences at Columbia University. Since the late 1970s, he has worked on studies and computer simulations of the Earth's climate, for the purpose of understanding the human impact on global climate. Hansen has collected and analyzed global surface temperatures and studied the Earth's atmosphere since the 1970s. His research focuses on the development and application of global numerical models for the purpose of understanding current climate trends and projecting the potential human impact on climate. Dr. Hansen has published more than 100 scientific papers and numerous popular science articles. Dr. Hansen is best known for his testimony on climate change to congressional committees in the 1980s that helped raise broad awareness of the global warming issue. Dr. Hansen has been a lightning rod for climate-change science over the past three decades. As an inventive and outspoken scientist, he has been thrust into the limelight of our national debate over climate change. Dr. Hansen has examined both natural and human influences, from volcanoes to greenhouse gases to aerosols and dust, leaving no stone unturned in improving our understanding of climate change. He has welcomed collaborations with the paleo-climate community as a key to understanding climate sensitivity today. Dr. Hansen is a strong advocate for satellites to monitor climate change. Under his leadership, the Goddard Institute for Space Studies has developed into one

of the top climate research laboratories in the world. His publications have proven original and long-lasting. Dr. Hansen was elected to the National Academy of Sciences in 1995. Dr. Hansen received the prestigious Heinz Environment Award for his research on global warming in 2001.

### ***Alan C. Lloyd, Ph.D.—Clean Air Technologies***



Dr. Alan Lloyd is the President of the International Council on Clean Transportation. Before his current position, he led the California Environmental Protection Agency (Cal/EPA) as its Secretary from 2004 to 2006 and the Air Resources Board as its chairman for five years. Dr. Lloyd served as the executive director of the Desert Research Institute for three years.

Before then, Dr. Lloyd was the chief scientist of the South Coast Air Quality Management District (SCAQMD) for seven years. Dr. Lloyd began his association with air quality issues in California with a three year stint as Assistant Director of the Statewide Air Pollution Research Center. Dr. Lloyd helped to shape the research programs at both the SCAQMD and the ARB. Throughout his long and distinguished career in air pollution, he stressed scientific integrity and promoted research in atmospheric chemistry and emissions control development. While leading the Cal/EPA, he promoted sound scientific input into an open and consistent decision-making process. Dr. Lloyd led ARB in promulgating programs spurring development of new technologies and new approaches to emission controls and energy management. Examples of new technology initiatives Dr. Lloyd has supported are the fuel cell and hydrogen highway programs and new and innovative technologies to reduce diesel emissions such as research into diesel particulate traps. Through his leadership and perseverance, ARB's sponsorship of clean air technologies has become a significant source of new and exciting start ups for emissions reduction technologies and for significant new air pollution monitoring and measurement programs. Dr. Lloyd's efforts have focused on the viable future of advanced technology and renewable fuels, with attention to urban air quality issues and global climate change. A proponent of alternate fuels, electric drive and fuel cell vehicles eventually leading to a hydrogen economy, Dr. Lloyd was the 2003 Chairman of the California Fuel Cell Partnership and is a co-founder of the California Stationary Fuel Cell collaborative.

### ***Ms. Fran Pavley—Environmental Policy***



Ms. Pavley currently works with the Natural Resources Defense Council and will run for a seat in the California State Senate. Previously, she served three terms in the California State Assembly (2000-2006) and chaired the Air & Water Quality Committee and the Hydrogen & Other Alternative Fuels Committee. She has served on the California Coastal Commission (1995-2000) and was the first Mayor of Agoura Hills, where she also served as Mayor/Councilmember for four terms (1982-1997). During her tenure in the State Assembly, Ms. Pavley became known as one of the most effective legislators in Sacramento. Serving with integrity and vision, she had over 70 of her bills and resolutions become law. Ms. Pavley focused her efforts on education, the environment, consumer protection, public safety, and creating a clean, secure energy future for Californians. She sponsored landmark legislation on global warming that has become a model for other states and countries to follow. For example, 11 other states and Canada have modeled their laws after Ms. Pavley's Clean Car Regulations, (AB 1493, also known as the Pavley Bill), which will reduce greenhouse gas emissions (GHG) emissions from light-duty vehicles 30% by 2016. The "Global Warming Solutions Act of 2006" (AB 32), which she co-sponsored with Assembly Speaker Nuñez, will reduce GHG emissions in California 25% by 2020. This legislation will help spur an increased investment in alternative fuels, renewable energy and clean technologies. Her leadership on the most important environmental issue facing our world in the 21<sup>st</sup> Century has been recognized by many entities, including being selected as one of Scientific American's Top Technology Leaders in Transportation, and receiving the 2006 California League of Conservation Voters "Global Warming Leadership Award". Other major bills that Ms. Pavley sponsored include AB 2628 (Hybrids in HOV Lanes) to encourage hybrid vehicles, AB 1007 (Alternative Fuels) to diversify fuel supply, and AB 2276 (Indoor Air Cleaners) to reduce hazardous emissions from indoor air cleaning devices.

### **2008**

#### ***Robert Sawyer, Ph.D.—Clean Air Technologies***



Dr. Robert Sawyer is a pioneer in improving the environment through engineering solutions, and has made significant contributions to our understanding of air pollution. His active research—culminating in more than 350 technical publications

and two books—is matched by his dedication to teaching and mentoring as a professor at the University of California, Berkeley. Dr. Sawyer was recently inducted into the National Academy of Engineering, which is among the highest professional distinctions. His service at the interface of science and civil society includes, most recently, his 2005-2007 Chairmanship of the Air Resources Board (ARB) where he guided the ARB through swift and substantive transitions, including the passage of the California Global Warming Solutions Act of 2006 (AB 32), which vested in ARB responsibility for reducing California’s greenhouse gas emissions to 1990 levels by 2020; Governor Schwarzenegger’s Executive Order (S-01-07) to implement a Low Carbon Fuel Standard; and a Supreme Court decision that carbon dioxide is an air pollutant, which bolstered California’s court case to regulate tailpipe emissions of greenhouse gases (under Assemblymember Fran Pavley’s AB 1493).

### ***Hank Wedaa—Clean Air Policies***



Henry “Hank” Wedaa has a life-long history of public service and working towards implementation of new technologies which help clean the air. He served eight terms on the Yorba Linda City Council, which included five non-consecutive years as Mayor of this north Orange County city located in Southern California. His career in local government included service on a wide variety of committees and boards including seven years on the South Coast Air Quality Management District’s (SCAQMD’s) Governing Board, with four years as Vice-Chairman and three years as Chairman. Under his leadership the Board pushed for control of stationary source NO<sub>x</sub>, resulting in major air quality improvements. As a result of SCAQMD’s many accomplishments during Mr. Wedaa’s leadership on the Board he was elected Chairman Emeritus. He also served as President of the Southern California Association of Governments (SCAG) and twelve years as Chairman of SCAG’s Aviation Committee. Mr. Wedaa is a major advocate for advanced technologies as former Chairman of the North American Clean Air Alliance for zero emission vehicles, a co-founder of Fuel Cells for Transportation, and past President of the California Association of Councils of Government. He is currently President of the California Hydrogen Business Council and also served as Vice-Chairman and Director of Hydrogen 2000, non-profit organizations devoted to education about and advocacy for hydrogen technologies.

## ***Alexander Farrell, Ph.D.—Air Pollution Science***



Alex Farrell, whom we honor with a posthumous award, was at the center of a vibrant scholarly community of researchers and scientists and policy experts with a global reach. Farrell joined the UC Berkeley faculty in 2003 and became director of the campus's Transportation Sustainability Research Center in 2006. He was recognized internationally as a leading expert on transportation fuels and the role of transportation in climate change. His research interests included biofuels, hybrid electric vehicles and hydrogen vehicles, the low-carbon fuel standard and transportation sustainability. For the State of California, he was involved in the most central research and analysis projects for the Low Carbon Fuel Standard and AB32, and he wrote and spoke frequently about plug-in hybrids.

A passionate and articulate researcher, Farrell frequently offered fresh perspectives to frame problems and results, challenging academic colleagues as well as advocates of clean technology and climate policy. His communication style was open, simple, and direct, even when faced with the daunting task of distilling complex scientifically-based ideas to a policy audience. His dedication inspired hundreds of students and many more who followed his work.

"He was one of the leading lights in the area of low-carbon fuels and energy systems, and his career was on a dramatic rise," said colleague Dan Kammen, a professor in the Energy and Resources Group and of public policy who helped recruit Farrell to UC Berkeley and co-authored many papers with him, including a just-released report on plug-in hybrid vehicles. "The trajectory of his career and his contributions were both impressive. Alex was a great mentor to the graduate students in the group as well as to students from across campus working on energy and sustainability."